**Virginia City Hybrid Energy Center**
**Response to Data Request**
**Bruce Buckheit, Member, Virginia Air Pollution Control Board**

**Question (Page No. 3 - 5):**

My review over the past three weeks leads me to believe that detail issues in the Dominion proposal that have not been examined may be environmentally significant. As part of my evaluation process I examined plausible assumptions concerning control device efficiencies for the combination of circulating fluidized bed and spray dryer absorber6 ("CFB/SDA") SO2 controls as proposed by Dominion. I have made some "what if" calculations, based on the technology choices made by Dominion and published information concerning their effectiveness. These emission estimates are far below what has been suggested by Dominion and accepted by DEQ and yet, in many applications outside of the United States, a CFB without a follow on dry scrubber is considered an acceptable pollution control system. It follows that one could expect extraordinary performance if one combines a dry scrubber and a CFB. It also appears that a significant portion of the environmental impact of the proposed project is associated with the suggestion to use unwashed coal and coal wastes. If, at the end of this process it can be determined that emissions may be limited as suggested in these calculations, much of the public's concern about the VCHEC SO2 and Hg emissions may abate.

While I and the other members of Board will examine other technologies, the record concerning the broad issues raised by competing technologies is reasonably complete. The focus of my near term information gathering requests will be (1) issues associated with the use of coal washing; (2) gaining an accurate understanding of the performance of the control systems proposed by Dominion and (3) acquiring information relating to the broader issues that must be evaluated when a permit applicant attempts to demonstrate that the "most effective control technology" is "infeasible." Of course, should the assumptions underlying these calculations prove to be significantly in error, the Board will have other options that it may adopt.

**Response:**

This station will improve the environment of southwest Virginia by eliminating waste coal piles that have the potential to contribute to decreased water quality in the region by leaching metals and other pollutants. The utilization of waste coal piles as fuel, and the subsequent storage in a highly regulated landfill, has less of an impact on the environment than simply doing nothing to the numerous coal waste piles in the area. By utilizing ROM coal, no waste stream is created other than the ash, which is stored in a certified solid waste management facility with liners, extensive monitoring, and treatment of leachate.

Washing ROM coal removes Hg bound to rock but has little effect on Hg bound to the coal. Also, chlorine and unburned carbon in ROM fuel assists in the removal of mercury. Coal refuse, or waste coal, is known to contain a higher concentration of Hg per ton of coal than high Btu, or washed bituminous coals. This is presumably because the waste coal includes all of the rock that had been historically washed out of ROM coal. However, EPA determined that CFB units firing waste coal (including an extreme % of rock mercury) emitted substantially less Hg from their stacks than those burning high Btu Eastern Bituminous coals. EPA went on to propose a MACT Floor for boilers that burn waste coal (the extreme opposite of washed coal) that was lower than for units burning high Btu washed Bituminous coal.

The tables and graphs on pages 3, 4, and 5 of the commenter's letter show VCHEC mercury and SO2 emissions in the first line in an attempt to compare them to hypothetical scenarios of increasingly higher control efficiencies and lower coal mercury and SO2 concentrations. The math associated with the graphics is correct; however, these are theoretical scenarios that are not substantiated with actual data from an operating plant.

We note that $SO_2$ removal by add-on control is effected by the inlet concentration of the control device; due to reaction kinetics, as that concentration drops, the removal efficiency also drops. We also note that, the Mecklenburg plant's low mercury emissions cited in the chart are due to the high carbon in the fly ash at the unit. The mercury is absorbed onto the unburned carbon. The low mercury is not due to coal washing.

Finally, as noted in the comment, outside the U.S., CFB's operate without add-on controls. The resulting emission levels would not meet the BACT levels required by U.S. Therefore, they are not comparable to the VCHEC.